QUOTE TO: ANDREWS MECHANICAL, INC E 1503 WABASH SPOKANE, WA 99207 SHIP TO: ANDREWS MECHANICAL 2727 N. MADELIA SUITE 8 SPOKANE, WA 99207

CRISTONER MUNDER	CUSTOM	R CRIEF ROMBER		RELEASE HUMBER		LESPLESOR
28451	Pipe Insu					
WE LED		\$115.016		TERES	SHIR DATE	FREADH ALLOWED
				2% 10th Net 3		~~ <del>^</del> ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
DRUGE GT#	\$420 NO ***		semies axpire	s on 03/05/14	Not. Ptc.	ESE Pec
1ft		1/8IDx1/2 WALL			0.401	0.40
1ft	,	1/8IDx1 WALL (	GLUED	INSULATION	1.075	1.08
	PII	•	TAXES	NOT INCLUDED		
					127	
				*		
						3
This quotation has	been prepared fo	r your convenience per	our inter	rpretation of the	Subtotal	1.48
specifications sent herein. Fixtures at period of (7) days.	t to us. Your pro re white except w unless otherwise	r your convenience per tection is a recheck of here noted. Prices quot e stated, from the date	the mate ted are gu	erial contained waranteed for a guote. Clerical	sen Chgs	0.00
errors are subject	to correction.				Amount Due	1.48



### Owens-Corning Fiberglas SSL-II\* Pipe Insulation with Doublesure\* Closure System



### Uses

Fiberglas SSL-II pipe insulation is recommended for use on all hot, cold, concealed, and exposed piping operating at temperatures from 0 to 850F in commercial and institutional buildings, industrial facilities, and process or power plants.

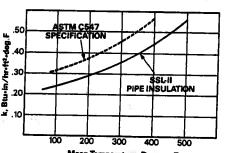
**Description** 

Owens-Corning Fiberglas SSL-II® Pipe Insulation is jacketed with reinforced all service vapor retarder jacketing. The jacketing has a factory-applied double pressure-sensitive adhesive system which provides positive closure and vapor sealing of the longitudinal joint, at ambient temperatures ranging from 25F to 110F. Joints between insulation sections are sealed with butt strips which also have a two-component adhesive system. This Doublesure\* jacket closure system provides an extremely effective vapor seal, protecting the insulation against entry of moisture. It can also significantly improve installation productivity by eliminating in most cases the need for staples, mastics and bands.

### **Physical Properties**

Property	Test Method	Specification
Pipe operating temperature range	ASTM C 411	0 to 850F (1)
Jacket surface temperature limitation	7,01,111,0411	-20F to +150F
Jacket permeance	ASTM E 96	0.02 perm
Puncture resistance	ASTM D 781	50 units
Composite surface burning characterist	ics UL 723*	Flame spread 25* Smoke developed 50

Thermal Conductivity, k (ASTM C 335)



Mean Temperature, Degrees F (Average of hot and cold surface temperatures)

### **Specification Compliance**

Fiberglas SSL-II pipe insulation complies with the property requirements of the following specifications:

\*\*Preproduction qualification testing complete and on file. Chemical analysis of each production lot required for total conformance.

### Availability

Fiberglas SSL-II pipe insulation is available in thicknesses from 1/2" to 5" for application to nominal pipe sizes from 1/2" up, as listed on the reverse side of this submittal sheet.

<sup>(1)</sup> Limited to single layer applications above 650F, but not greater than 6° thickness.

<sup>\*</sup>The surface burning characteristics of these products have been determined in accordance with UL 723. This standard should be used to measure and describe the properties of materials, products, or assemblles in response to heat and flame under controlled laboratory conditions and should not be used to describe or appraise the fire hazard or fire risk of materials, products, or assemblies under actual fire conditions. However, results of these tests may be used as elements of a fire risk assessment which takes into account all of the factors which are pertinent to an assessment of the fire hazard of a particular end use. Values are reported to the nearest 5 rating.

<sup>\*</sup>Trademark registered Morgan Adhesives Co.

# AEROCEL-SSPT®

### Closed Cell Elastomeric Thermal Insulation for HVAC & R

### **General**

AEROCEL® Tube Insulation is a highly flexible, closed-cell and lightweight EPDM-rubber based elastomeric product. Aerocel-SSPT® Tube Insulation is designed for insulating warm or cold piping, duct, or equipment. Aerocel-SSPT® EPDM Elastomeric Tube Insulation is supplied in 1/4", 3/8", 1/2", 3/4", 1", 1-1/4",1-1/2" ", 2", 2-1/2" and 3" thicknesses, in popular I.D. sizes up to 8" IPS. Please check for specific size combinations. The tightly formed, closed-cell structure of Aerocel-SSPT® Tube Insulation makes it an efficient insulation, providing superior insulating capacity to many materials, including other elastomeric insulations. Aerocel is manufactured to consistently provide actual values on these key performance criteria for mechanical system insulation:

Self-Seal with Protape (SSPT) affords the most secure self-seal, dual-tape closure available. Avoids call-backs or failures. Maintains its seal in harsh conditions.

Thermal Conductivity: 0.245

Water Vapor Transmission, Perms: 0.03 UV Resistance: Minimal change, ASTM G 7 and

ASTM G 90

Fire Rating: Will not contribute significantly to fire

(simulated end-use testing).

Aerocel-SSPT® Tube Insulation, in 1/4" through 2" thickness, has a flame spread rating of 25 or less and a smoke developed rating of 50 or less as tested by ASTM E 84 "Surface Burning Characteristics of Building Materials." Aerocel EPDM Pipe Insulation is acceptable for use in air distribution systems including ducts, plenums, air handling equipment and air terminal devices.

#### Uses

Aerocel-SSPT® Pipe Insulation is used to retard heat gain or loss, and to control condensation formation on cold-water plumbing, chilled water, and refrigeration lines. The material also efficiently reduces heat flow on hot water plumbing, liquid heating and dual-temperature piping systems. Aerocel® sheet is used to insulate large OD pipes, chillers, vessels and tanks, and can be used as a duct liner or duct wrap. The recommended service temperature range for Aerocel Insulation is -297°F to +257°F. Aerocel® is designed for installation above and below ground, indoors and outdoors. No protective finish is required.

Aerocel-SSPT® Pipe Insulation is uniquely suited, over many other cellular or fibrous insulation materials, to dual-temperature HVAC piping systems. This unique fit results from Aerocel's proprietary combination of very low moisture vapor flow for times of cooling-mode operation, higher temperature usage properties during times of heating-mode operation, and superior insulating capacity in either operating mode.

Aerocel-SSPT® Pipe Insulation is uniquely suited to Solar piping systems because of its proprietary combination of UV Resistance, greater thermal efficiency, non-corrosiveness to copper or stainless steel, and availability as single layer product in greater thicknesses.

### Resistance to Moisture Vapor Flow

The unique cell structure of Aerocel® EPDM Insulation effectively retards the flow of moisture vapor. Aerocel is considered a low transmittance vapor retarder. In normal service conditions, Aerocel requires no supplemental vapor retarder protection. When used in extremely low-temperature or extremely high-humidity conditions, an additional vapor barrier maybe required.

### **Key Features**

- UV Resistant Added Weather Protection Not Required, Saves on First Cost and Maintenance
- Lower Thermal Conductivity Saves Additional Energy Costs
- 257° Upper Use Limit Greater Application Range Cryogenic to Low Pressure Steam
- E 84 25/50 to 2"
   Thickness Lowers
   Installation Costs
   with Fewer Layers
- Versatile for Heating, AC, Refrigeration, Solar, Plumbing – Single Product for All Systems
- Easy to install Lowers Installation Costs, Keeps Job Cost as Estimated





### **Features & Benefits**

UV Resistant	Tundra EPDM rubber pipe insulation won't break down when exposed to sunlight. No protective coat- ing required in outdoor applications.
Moisture Resistant	Resists the decomposition moisture causes in other types of closed-cell elastomeric insulation. Tundra has the lowest moisture resistance in the industry (.03 perm rating).
Low Thermal Conductivity	With a .245 k-factor, Tundra offers the best insula- tion value for closed-cell elastomeric insulation.
Low Temperature Flexibility	Tundra EPDM rubber pipe insulation does not lose its flexibility in cold temperatures.
Extreme Temperature Resistance	Resists the aging effect caused by exposure to temperature extremes. Tundra has an upper temperature limit of 257°F, more than 30° higher than other closed-cell elastomeric insulation products. Tundra also works on dual-temperature systems.
ASTM E-84 Tested	Tundra has a 25/50 flame/smoke rating in thickness up to and including 2".

Industrial Thermo Polymers Limited
153 Van Kirk Drive, Brampton, Ontario L7A 1A4
Tel: 905.846.3666 Fax: 905.846.0363 Toll Free: 1.800.387.3847 Email: info@tundrafoam.com Web: www.tundrafoam.com



### **Application**

AEROCEL-SSPT® Aerocel-SSPT® utilizes a unique 2 step sealing system to insure a permanent seal. Step 1 is an acrylic adhesive seam seal on the inside of the longitudinal joint. Step 2 is an EPDM flap that utilizes a cellular fusion adhesive that closes across the top of the longitudinal seam. This adhesive chemistry bonds the EPDM to the tube ensuring a seal for the life of the system. Butt joints and other seams are to be sealed with contact adhesive. Fittings can be fabricated from straight tubing or sheet. Larger diameter, curved, or flat surfaces can be insulated by adhering properly fabricated sheet sections to them. Consult the Aeroflex Installation Handbook for more complete installation details and instructions.

Aerocel® is designed for installation above and below ground, indoors and outdoors. No protective finish is required. In addition to the specifications listed below, Aerocel also is approved by or conforms to the requirements of the following: ASTM C 534 Type I and II, NY City MEA #171-04-M, City of LA RR-8413, UL 181 Section 13 Mold Growth/Humidity, ASTM G 21 Fungal Resistance Test, UL181 Section 18 Air Erosion, NFPA 90A & 90B, MIL15280J, CAN/ULC-S102-07.

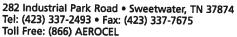
Aerocel Sheet and Tube insulations meet the energy code requirements of International Energy Conservation Code(IECC) and ASHRAE for R-4 for Refrigeration Piping at 1" wall thickness.

PHYSICAL PROPERTIES		RE	SULT	TEST METHOD			
Cell Structure			Clos	ed Cell			
Thermal Conductivity	Mean temp.	-4'F (-20'C)	32°F (0°C)	75°F (24°C)	90'F (32'C)	ASTM C 518 / C 177	
			THE PERSON NAMED IN			104°F (40°C)	
BTU.in/ft.²hr. 'F	K-value	0.22	0.23	0.245	0.25	0.265	
Service Temperature, CO	NTINUOUS			to +257°F to +125°C		ASTM C 411 AEROCEL loses flexibility at -70°F. This does not affect the insulating properties of the material.	
U.V. Resistance				PASS	ASTM G 7 / G 90		
Ozone Resistance			No	cracking	ASTM D 1171		
Water Vapor Permeability			.03 perm	(4.38 x 10 <sup>-11</sup> )	ASTM E 96		
Water Absorption (weight	Water Absorption (weight %)			.2%	ASTM C 209		
Eleo Cafate Characteristics			UL-94	5 V-A, V-O	File E228536		
Fire Safety Characteristics Through 2" thickness			2	25/50	ASTM E84		
Through 2 thickness			Self ex	tinquishing	ASTM D 635		
Corrosion of Stainless Steel			Non	corrosive	ASTM C 692, DIN 1988		
Nitrosamine Content			None	detected	U.S. FDA CPG No. 7117.11 BSEN 12868		
Flexibility				PASS		ASTM C 534	

ALL STREET, ST	ASHRAE 90.1-2007 E	NERGY EFFICIENCY	INSULATION THICKN	ESS	AS HINGS W			
			Pipe Sizes					
	<1" ID	1" ID to <1-1/2" ID	1-1/2" ID to < 4" ID	4" ID to < 8" ID	≥8" ID			
Operating Temperature	Space Heating (Insulation Thickness, Inches)							
201 Deg. F - 250 Deg. F	1-1/2"	1-1/2"	2'	2'	2"			
141 Deg. F - 200 Deg. F		11	1.	1-1/2"	1-1/2"			
105 Deg. F - 140 Deg. F	1/2*	1/2"			11			
Operating Temperature		Service Water I	eating (Insulation Thic	kness, Inches)				
105 Deg. F+	1/2" 1/2"		10.00		1.0			
Operating Temperature	Control 1993 (class And ) 1775 (class file 1915). Class 2 Prof. 11 (class).			ess, Inches)				
40 Deg. F - 60 Deg. F	1/2"	1/2"		11 Constant	1000			
≤40 Deg. F	1/2*			1	1-1/2*			
MIN	IMUM THICKNESS OF	VEDOCEI BEOLUBED	TO DEEVENT CONDE					
				MSATION				
	Design Condition	ons — 85 Deg. F, 70% RH,						
	Pipe Operating Temperature  50 Deg. SS Deg. F 0 Deg. F -20 Deg							
ulation Thickness		THE RESERVE THE PERSON NAMED IN						
1/4"			Pipe Outside Diameters					
3/8"	3/8" - 1" 3/4" - 6"			-				
1/2*	3/4 - 6	3/8° - 3/4 7/8° - 6'						
3/4*		//8 - 6		1-1/2"				
				8'-6'	3/8" - 1/2"			
1-1/4"			1-3/	0 - 0	3/4" - 2-1/2" 2-5/8" - 6"			
	Design Condition	ns - 80 Deg. F, 50% RH,	Low Air Movement		2-0/0 - 0			
1/4"	3/8* - 6*	3/8' - 6'		Alexander of the latest	Charles of the last of the las			
3/8"			CONTRACTOR OF THE PARTY OF THE	- 3/4"				
1/2"				- 6	3/8" - 1"			
3/4"					1-1/8" - 6"			
	Design Cenditie	ns - 90 Deg. F, 80% RH,	Low Air Movement	CONTRACTOR OF THE PERSON NAMED IN				
/2'	3/8" - 7"		WHEN STREET	ESCULVENCIAL PROPERTY.	HIEDON BANK			
3/4*	1'-6'	3/8' - 2'						
		2-1/8" - 6	3/8*	- 1/2"				
I-1/4*				'-2'	3/8" - 7/8"			
l-1/2°			2-1/	8' - 6'	1" - 2-1/8"			
	THE REAL PROPERTY.				2-1/4" - 6"			

Although in some areas of the country, 1/4" and 3/8" wall thicknesses are recommended, Aeroffex USA recommends 1/2" minimum wall thickness for optimum performance.





Website: www.aeroflexusa.com











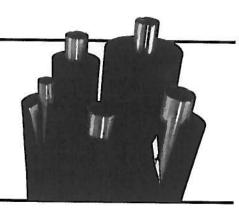




# Tundra Seal

### **EPDM Rubber Pipe Insulation**

Closed Cell Elastomeric Thermal Insulation for HVAC & Refrigeration



### General

Tundra Seal EPDM Rubber Pipe Insulation is a flexible, closed-cell and light weight EPDM based elastomeric material designed for insulating liquid cooling and heating lines. The closed-cell structure makes it an efficient insulation. Tundra Seal is manufactured to consistently provide actual values on these key performance criteria for mechanical system insulation:

Thermal Conductivity: 0.25 Water Vapour Transmission: 0.1 Fire Rating: Will not contribute significantly to fire (simulated end-use testing).

Tundra Seal comes in 3/8" and 1/2" thicknesses, has a flame spread rating of 25 or less and smoke developed rating of 50 or less as tested by ASTM E 84 "Surface Burning Characteristics of Building Materials".

**Note:** Numerical flammability ratings alone may not define the performance under actual fire conditions. They are

provided only for use in the selection of products to meet limits specified.

### **Key Features**

- UV Resistant
- Low thermal conductivity
- Easy to install
- 25/50 rated
- Versatile for heating,
   AC refrigeration and plumbing

### Uses

Tundra Seal is used to retard heat gain and control condensation drip from cold-water plumbing, chilled water and refrigeration lines. It also efficiently reduces heat flow for hot water plumbing, liquid heating and dual temperature piping. Tundra Seal's recommended temperature usage range is -70°F to + 257°F.

## Resistance to Moisture Vapour Flow

The closed-cell structure of Tundra Seal effectively retards the flow of moisture vapour, and is considered a low transmittance vapour retarder. It requires no supplemental vapour retarder protection.

### **Application**

Tundra Seal utilizes a unique 2-step sealing system to insure a permanent seal. Step 1 is an acrylic adhesive seam seal. Step 2 is an EPDM flap that utilizes a cellular fusion adhesive. This adhesive chemistry bonds the EPDM to the tube ensuring a seal for the life of the system.

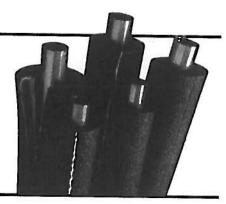
The closed-cell structure of Tundra Seal retards heat gain on low temperature applications and prevents heat loss on hot water applications. It resists moisture and vapour without the use of an additional barrier. It has a low and stable thermal conductivity. The raw material used for Tundra Seal has an excellent ultraviolet and weather resistance property.

### **Specifications**

Physical Properties	TUNDRA	Test Method	
Cell Structure	Closed Cell		
Density Lbs/ft³	3 to 6 Lbs/ft <sup>3</sup>	ASTM D 1687	
Thermal Mean Conductivity temp. BTU.IN/FT.²HR.°F K-Value	-40°F   32°F   75°F   90°F   (-20°C)   (0°C)   (24°C)   (32°C)   0.22   0.23   0.25   0.26	104°F (40°C) ASTM C177 0.27JIS A 1412	
Service Temp	-70°F to 257°F -57°C to +125°C	AEROCEL becomes hard at -57°C but can be used even at -200°C	
UV Weather Resistance	Excellent	ASTM G-23	
Ozone Resistance	No Cracking	ASTM D 1171	
Water Vapour Permeability	0.10 perm-in (0.15 x 10 <sup>-12</sup> )	ASTM C355	
Water Absorption (weight%)	0.2%	ASTM C 209	
Flammability	Class V O	UL-94	
Smoke Density	25/50	ASTM E84	
	Self Extinguishing	ASTM D635	
Corrosion of copper, stainless	Non corrosive	DIN1988	
Nitrosamine Contents	Not detected	U.S. FDA	
Flexibility	Excellent	_	



# Polyethylene Pipe Insulation



### General

Tundra Brand Polyethylene Pipe Insulation is a flexible and easy-to-apply tubing product available in Semi-Slit and Self-Sealing styles. It is packaged in cartons that feature the copper tube sizes in bold colour-coded print. The Self-Sealing version has yellow self-seal release liner that is both easy to see and peel.

Tundra Brand Polyethylene Pipe Insulation is sold in all the common sizes required for home plumbing systems, including special fittings for tees and 90° elbows. This chemically inert pipe insulation has a closed-cell structure that allows it to function as an efficient insulator.

### **Key Features**

- Low density
- Easy-to-apply

- Available in Self-Seal or Semi-Slit
- Best for indoor applications such as plumbing, hot water heater lines or in-floor radiant heat
- Best applications where temperature does not exceed 82°C or below -68°C
- Reduces Heat Loss
- Resists Freezing
- Reduces Condensation
- Reduces Plumbing Noise

### Uses

Tundra Brand Polyethylene Pipe Insulation is widely used to reduce unwanted heat loss or heat gain, decrease plumbing noise and maximize energy savings. It can be used on hot and cold water lines, refrigeration lines, air conditioning lines and underground lines. This product boasts a broad range of other insulating applications and can be used as a protective cover where necessary.

Tundra Brand Polyethylene Pipe Insulation meets all specifications for both home and industrial applications where the operating temperature is between -90°F and 180°F (-68°C and 82°C).

Tundra Brand Polyethylene Pipe Insulation has a flame spread rating of 25 or less and a smoke developed rating of 50 or less, as tested by ASTM E 84 "Surface Burning Characteristics of Building Materials."

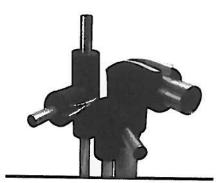
**Note:** Numerical flammability ratings alone may not define the performance under actual fire conditions. They are provided only for use in the selection of products to ensure the specified limits are met.

Available in 3 and 6 foot lengths. 3' available in bulk or bagged 4 sticks.

All sizes available in 3/8" and 5/8" wide thickness.

### **Specifications**

Physical Properties	TUNDRA	Test Method
Material	Closed Cell Polyolefin	
Colour	Charcoal	<del>-</del>
Upper Use Limit	180° F (82° C) constant	
Lower Use Limit	-90° F (-68° C)	_
Density	1.5 lbs/ft³	ASTM D 1622
Ozone Resistance	Good	ASTM D 1171
Thermal Conductivity (K)	at 75° F (24° C) Mean Temp	ASTM C 177 or C 518
BTU-in/hr-ft² -°F (W/m-K)	0.230 (0.033)	<u></u>
Water Absorption	0.02% by Volume	ASTM E 96
Flame Speed	Less than 25	ASTM E 84; CAN/ ULC-S102.2-M88
Smoke Classification	Less than 50	ASTM E 84; CAN/ ULC-S102.2-M88



T's and Elbows are available in all sizes.



### **Tundra Seal Fittings**

Note: Self-seal. Colour Coded Packaging. Inches Shown)

Part Number	rt Number Nominal Copper I ID size Nom.		Iron Pipe/ PVC Nom. ID	THE RESERVE AND ADDRESS OF THE PERSON NAMED IN	
SEAL FITTINGS (SELF-	IEAL)/TEE'S IN SHEL	F PACK CARTONS (CTN	14.5" X 7.25" X 6.5") ·	(3/8" WALL)	
PF38058T5TU0	5/8" ID	1/2"	N/A	16	
PF38078T5TU0	7/8" ID	3/4" 3/8"		12	
PF38118T5TU0	1-1/8" ID	1" 1/2"		12	
PF38138T5TU0	1-3/8" ID	1-1/4"	3/4"	8	
ELBOW'S IN	SHELF PACK CARTON	S (CTN: 14.5" X 7.25"	X 6.5") - (3/8" WALL	)	
PF38058T2TU0	5/8" ID	1/2"	N/A	32	
PF38078T2TU0 7/8" ID		3/4"	3/8"	20	
PF38118T2TU0	1-1/8" ID	1"	1/2"	16	
PF38138T2TU0	1-3/8" ID	1-1/4"	3/4"	12	

### Tundra (Semi-Slit)

Note: Semi-slit. Colour Coded Packaging. Inches Shown)

Part Number	Nominal	Copper Pipe	Iron Pipe/	Buy Pack
ANTHOUGH ST	ID size	Nom. ID	PVC Nom. ID	Duy rack
	3-FT BAGS OF 4 (UNI	TAPED - SEMI-SLIT) (3	/8" WALL)	William III
PR38058UATUO	5/8" ID	1/2"	3/8"	24
PR38078UATU0	7/8" ID	7/8" ID 3/4" 1/2"		18
PR38118UATUO	1-1/8" ID	1"	3/4"	14
PR38138UATUO	1-3/8" ID	1-1/4"	1"	10
	3-PT BAGS OF 4 (UNI	APED - SEMI-SLIT) (5	/8" WALL)	
PR58058UATU0	5/8" ID	1/2"	3/8"	16
PR58078UATU0	7/8" ID	3/4"	1/2"	12
PR58118UATU0	1-1/8" ID	1"	3/4"	10
PR58138UATU0	1-3/8" ID	1-1/4"	1"	7
	3-FT BULK (UNTAP	ED - SEMI-SLIT) (3/8	WALL)	
PR38058UMTU0	5/8" ID	1/2"	3/8"	100
PR38078UMTU0	7/8" ID	3/4"	1/2"	75
PR38118UMTU0	1-1/8" ID	1"	3/4"	55
PR38138UMTU0	1-3/8" ID	1-1/4"	1"	45
	3-FT BULK (UNTAP	ED - SEMI-SLIT) (5/8"	WALL)	
PR58058UMTU0	5/8" ID	1/2"	3/8"	64
PR58078UMTU0	7/8" ID	3/4"	1/2"	52
PR58118UMTU0	1-1/8" ID	1"	3/4"	40
	6-FT BULK (UNTAP	ED - SEMI-SLIT) (3/8"	WALL)	
PR38058UWTU0	5/8" ID	1/2"	3/8"	70
PR38078UWTU0	7/8" ID	3/4"	1/2"	50
PR38118UWTU0	1-1/8" ID	1"	3/4"	40
PR38138UWTU0	1-3/8" ID	1-1/4"	1"	32
	6-FT BULK (UNTAPE	D - SEMI-SLIT) (5/8"	WALL)	
PR58058UWTU0	5/8" ID	1/2"	3/8"	40
PR58078UWTU0	7/8" ID	3/4"	1/2"	35
PR58118UWTU0	1-1/8" ID	1"	3/4"	25
PR58138UWTU0	1-3/8" ID	1-1/4"	1"	20

### Tundra Seal (Self-Seal)

Note: Self-seal. Colour Coded Packaging. Inches Shown)

Part Number	Nominal ID size	Copper Pipe Nom. ID	Iron Pipe/ PVC Nom. ID	Buy Pack
	3-FT BAGS OF 4	(SELF-SEAL) (3/8" W	ALL)	
PR38058TATU0	5/8" ID	1/2"	3/8"	24
PR38078TATU0	7/8" ID	3/4"	1/2"	18
PR38118TATU0	1-1/8" ID	1"	3/4"	14
PR38138TATU0	1-3/8" ID	1-1/4"	1"	10
	3-PT BAGS OF 4	(SELF-SEAL) (5/8" W.	ALL)	
PR58058TATU0	5/8" ID	1/2"	3/8"	16
PR58078TATU1	7/8" ID	3/4"	1/2"	12
PR58118TATU0	1-1/8" ID	1"	3/4"	10
PR58138TATU0	1-3/8" ID	1-1/4"	1"	7
	3-FT BULK (S	ELF-SEAL) (3/8" WAL	L)	
PR38058TMTU0	5/8" ID	1/2"	3/8"	100
PR38078TMTU0	7/8" ID	3/4"	1/2"	75
PR38118TMTU0	1-1/8" ID	1"	3/4"	55
	6-FT BULK (S	ELF-SEAL) (3/8" WALI	L)	<u> </u>
PR38058TWTU0	5/8" ID	1/2"	3/8"	70
PR38078TWTU0	7/8" ID	3/4"	1/2"	50
PR38118TWTU0	1-1/8" ID	1"	3/4"	40
PR38138TWTU0	1-3/8" ID	1-1/4"	1"	32
	6-FT BULK (SI	LF-SEAL) (5/8" WALL	.)	-
PR58058TWTU0	5/8" ID	1/2"	3/8"	40
PR58078TWTU0	7/8" ID	3/4"	1/2"	35
PR58118TWTU0	1-1/8" ID	1"	3/4"	25
PR58138TWTU0	1-3/8" ID	1-1/4"	1"	20



Tundra Foam products come in easy-to-identify retail packaging.

### **Industrial Thermo Polymers Limited**

153 Van Kirk Drive, Brampton, Ontario L7A 1A4
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Email: info@tundrafoam.com Web: www.tundrafoam.com



### IMCAA Self-Seal Tube

TECHNICAL DATA

Physical Properties		IMCOLOCK Insulation	Test Methods
Thermal Conductivity (K)	90°F (32°C) Mean Temp	.255 (.037)	ASTM C 177/C 518
BTU -in/hr - F(? • °F (W/mK)	75°F (24°C) Mean Temp	.250 (.038)	ASTM C 177/C 518
	50°F (10°C) Mean Temp	.245 (.035)	ASTM C 177/C 518
Common and and Render	MININE SECTION OF SECT		
Flexible to -100"F (-/3"C)	Lower	-330°F (-201°C)	
Water Yaper Persashing Dry CVD Perman		0.00	WE WE THE BEE
Ozure Resistance		Dage	ACTIA O AATA
GRANIEROSBNAN KARNANGE CHARLES			
Mildew Resistance/Air Erosion		Pass	UL 181

Pipe Size	Line	Temp	Line	Temp	Line	Temp	Line	Temp
	50 <b>`F</b>	10°C	35'F	2°C	0°F	-18°C	-20'F	-29°C
Noma Canada Manasa Barasa Cara Rena								
3/8" i.D. lhru 1-3/8"	3/8"	10 mm	1/2"	13 mm	3/4"	19 rnm	1"	25 mm
Over 1-3/8" thru 3-1/8"	3/8"	10 mm	1/2"	13 mm	7"	25 rnm	1"	25 mm
Over 3-1/8" thru 4-1/2"	3/8"	10 mm	1/2"	13 mm	1"	25 mm	1"	25 mm
Over 4-1/2"	1/2"	13 mm	3/4"	19 mm	1"	25 mm	1-1/4"	
Mild Conditions (May 35 % 28 CO 55 W F. III F. III	FERTING!	All translates the first						32 mm
3/8" I.D. thru 2-1/8"	9/48:34893 3/8"	10 mm	'⊪		• • • • • • • • • • • • • • • • • • • •	A		
Over 2-1/8" thru 3-1/8"	3/8"			10 mm	1/2"	13 nnm	1/2"	13 mm
Over 3-1/8" thru 4-1/2"*		10 mm	3/8"	10 mm	1/2"	13 mm	1/2"	13 mm
Over 4-1/2"	3/8"	10 mm	3/8"	10 mm	3/4"	19 กาก	3/4"	19 mm
	3/8"	10 mm	1/24	13 mm	3/4"	19 mm	3/4"	19 mm
Severe Conditions was posterious and the severe conditions and the severe conditions are severe conditions are severe conditions are severe conditions and the severe conditions are severe conditions are severe conditions are severe conditions and the severe conditions are severe conditions and the severe conditions are severe co		Military L. Carre						
3/8" I.D. thru 1-1/8" I.D.	3/4"	19 mm	3/4"	19 mm	1-1/4"	32 mm	1-1/4"	32 mm
Over 1-1/8" I.D. thru 4-1/2"	3/4"	19 mm	1"	25 mm	1-1/2"	38 mm	1-1/2"	38 mm
Over 4-1/2"	3/4"	19 mm	1 <sup>r</sup>	25 mm	1-1/2"	38 mm	2"	50 mm

IMCOLOCK® in thickness noted within the specified temperature renges will prevent condensation on Indoor piping under design conditions defined below.

Thickness recommendations above 1° can be sleeved to acritive thickness desired.

Normal: Maximum severity of indoor conditions seldom exceed 86°P and 70% R.H. in United States.

Mild: Typical conditions are most dir-conditioned spaces and and climates.

Sevene; Generally found in arose where excessive moisture is introduced or in poorly ventilated areas where the temperature may be depressed below the ambient. 

"Available: Norm. 1/2" or Norm, 3/4° thickness only.

IMCOLOCK <sup>1</sup> "R" Values Pipe 0.D. or Nominal Insulation I.D.		R Value 3.8" (10 mm) Wall	R Value 1/2" (13 mm) Wall	R Value	R Value
3/8"	10 mm	3.1	4.2	3 4" (19 mm) Wall	1" (25 mm) Wall
1/2"	13 mm	2.8	3.7	6.6	9.3
5/8"	16 mm	2.8	3.5	B.0	8,5
<b>**</b>				5.6 Deubergarionale et en	7.9 ออกสาราชายนายเกรา
	200	23			
	20 1111				
1-3/6"	35 mm	2.3	3.2		<b>2014年19月1日 18月2日 - 11月1日</b>
1-5/8"	41 mm	2.3	2.9	4.6 4.6	6.8
2"	50 mm	2,0	2.6	4.1	6.2
			TERRITOR POR CATALO	ARTERIA DE LA COMPONIO	
2.078	The state of the s		**************************************		
3.4.4.2.5.18.18.18.18.18.18.18.18.18.18.18.18.18.	SPECIAL PROPERTY OF		12.0		67
2-7/8" 3-1/8"	72 mm	2.0	2.5	3.9	# 4 The Albini Manager Manager and American In-
	79 mm	2.3	2.8	4.1	5.5
3-1/2" ":::::::::::::::::::::::::::::::::::	89 mm	2.0	2,5	3.7	5.5
100		24	TENSOR WEST THE	THE PROPERTY OF THE PARTY.	THE TAX THE PROPERTY OF THE PARTY.
		11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	20 A STORY	STATE OF THE PARTY	NAME OF THE PARTY

Note: "R" factors were calculated using a K factor of .250 (75" F, 24" C most lamp.) and nominal wall thickness is each case. Lower operating temperatures will result in improved R values. Contact Tachnical Services for apadific recommendations.



3006 Anaconda Road | Tarboro, NC 27856 | p 866-875-2584 | 1856-876-2588 www.nomacoinsulation.com



#### NAIMA 3EPlus V4.1

Item ID = 1

Item Description =

System Application = Pipe - Horizontal

Dimensional Standard = ASTM C 585 Rigid

Calculation Type = Heat Loss Per Hour Report

Process Temperature = 110

Ambient Temperature = 72

Wind Speed = 0.0

Nominal Pipe Size = 0.5

Bare Metal = PVC

Bare Surface Emittance = 0.9

Insulation Layer 1 = 850F Mineral Fiber PIPE, Type I, C547-11

Outer Jacket Material = All Service Jacket

Outer Surface Emittance = 0.9

Variable Insulation Thickness	Surface Temp (°F)	Heat Loss (BTU/hr/ft)	Efficiency (%)
Bare	102.3	13.70	
0.5 —	78.3	4.74	65.39
1.0	75.3	3.45	74.82
1.5	74.1	2.84	79.28
2.0	73.5	2.53	81.54
2.5	73.1	2.22	83.78
3.0	72.9	2.09	84.72
3.5	72.8	1.99	85.47
4.0	72.7	1.91	86.07
4.5	72.6	1.83	86.64
5.0	72.5	1.77	87.06
5.5	72.5	1.72	87.42
6.0	72.4	1.67	87.82
6.5	72.4	1.63	88.09
7.0	72.3	1.60	88.34
7.5	72.3	1.57	88.56
8.0	72.3	1.54	88.77
8.5	72.3	1.51	88.95
9.0	72.3	1.49	89.12
9.5	72.2	1.47	89.28
10.0	72.2	1.45	89.43

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#### NAIMA 3EPlus V4.1

Item ID = 1

Item Description =

System Application = Pipe - Horizontal

Dimensional Standard = ASTM C 585 Rigid

Calculation Type = Heat Loss Per Hour Report

Process Temperature = 48

Ambient Temperature = 72

Wind Speed = 0.0

Nominal Pipe Size = 0.5

Bare Metal = PVC

Bare Surface Emittance = 0.9

Insulation Layer 1 = 850F Mineral Fiber PIPE, Type I, C547-11

Outer Jacket Material = All Service Jacket

Outer Surface Emittance = 0.9

Variable Insulation Thickness	Surface Temp (°F)	Heat Gain (BTU/hr/ft)	Efficiency (%)
Bare	52.4	7.88	
0.5	68.0	2.82	64.25
1.0	69.9	2.05	73.93
1.5	70.7	1.69	78.53
2.0	71.0	1.51	80.87
2.5	71.3	1.32	83.20
3.0	71.5	1.25	84.17
3.5	71.5	1.19	84.94
4.0	71.6	1.14	85.57
4.5	71.7	1.09	86.15
5.0	71.7	1.06	86.59
5.5	71.7	1.03	86.97
6.0	71.8	0.99	87.38
6.5	71.8	0.97	87.67
7.0	71.8	0.95	87.92
7.5	71.8	0.93	88.15
8.0	71.8	0.92	88.36
8.5	71.8	0.90	88.56
9.0	71.8	0.89	88.73
9.5	71.8	0.87	88.90
10.0	71.9	0.86	89.05

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